

FIG. 1

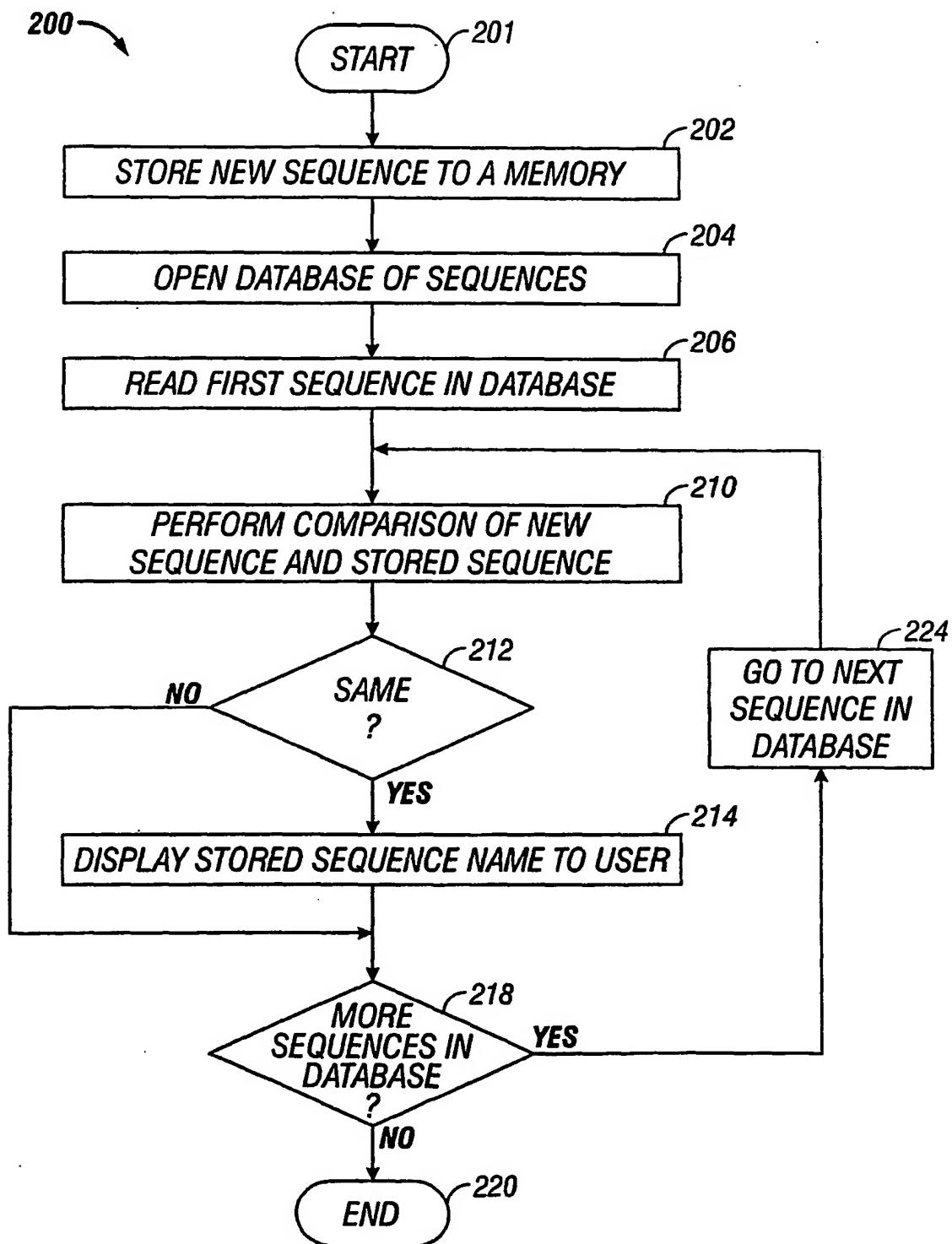


FIG. 2

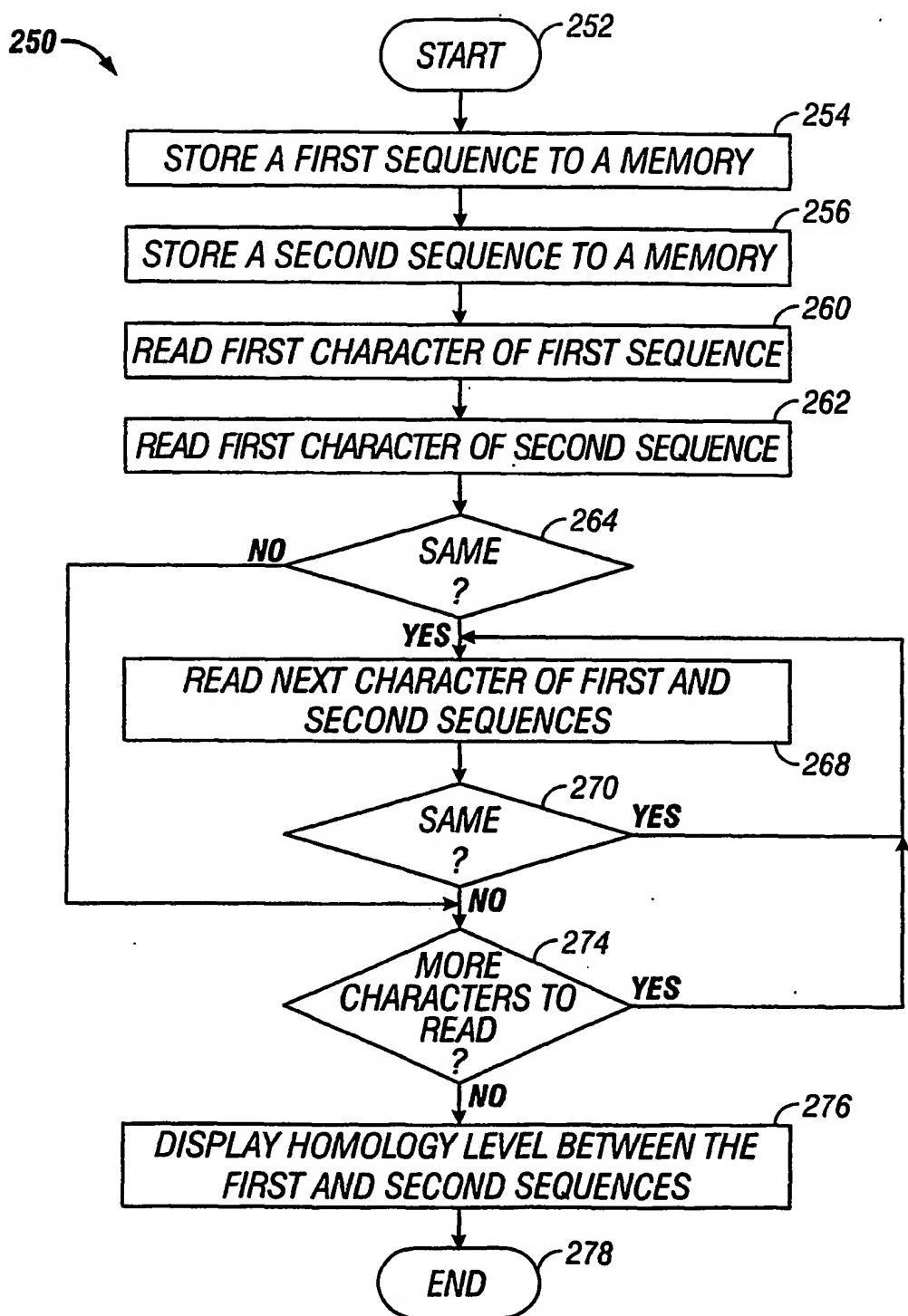


FIG. 3

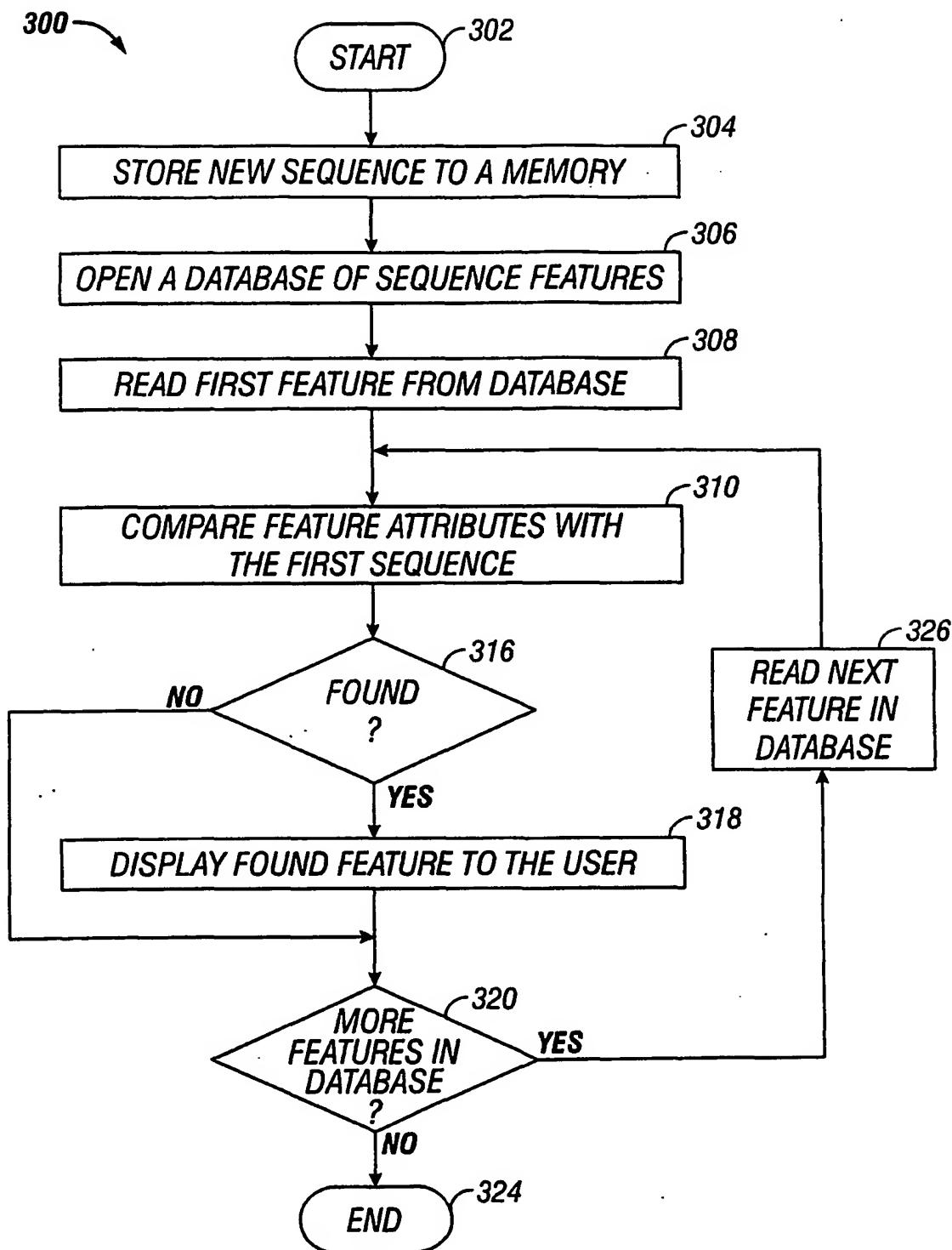


FIG. 4

**Figure 5: Thermal Tolerance of Wild-type Xylanase
(SEQ ID NOS:189 and 190)
vs. 8x Mutant**

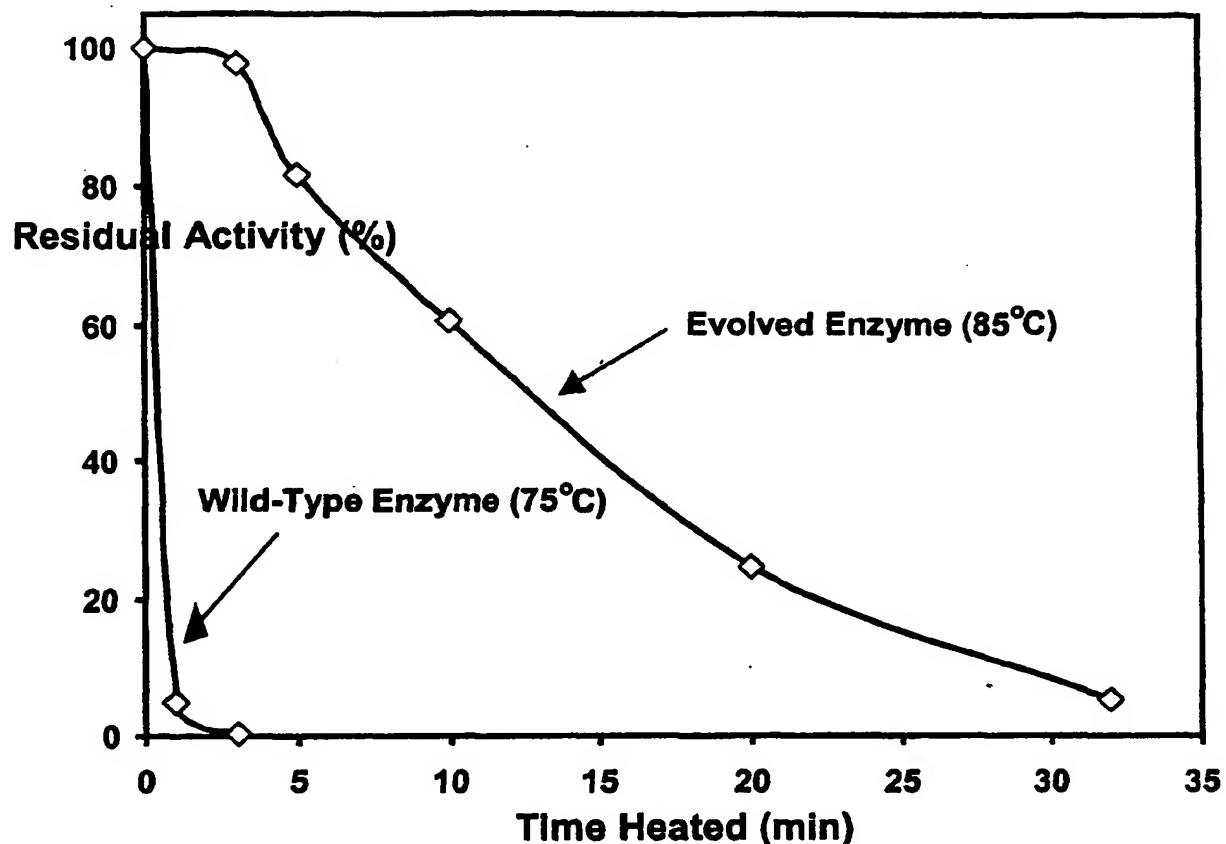


Figure 6

4

B

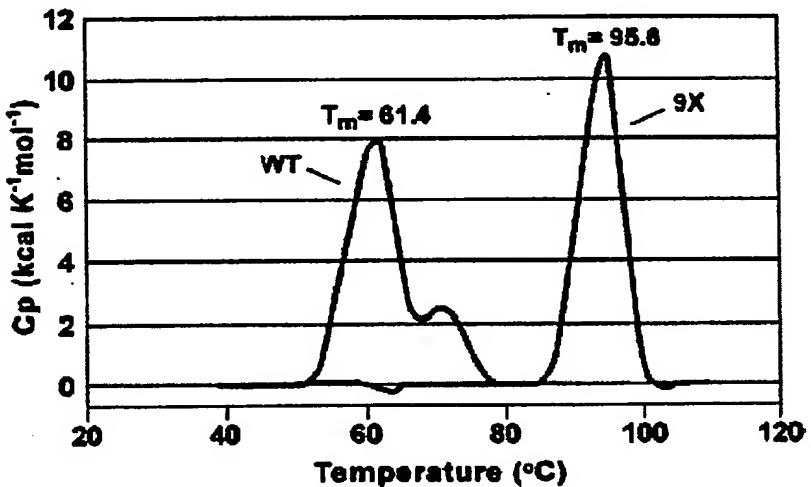


Figure 6

4

B

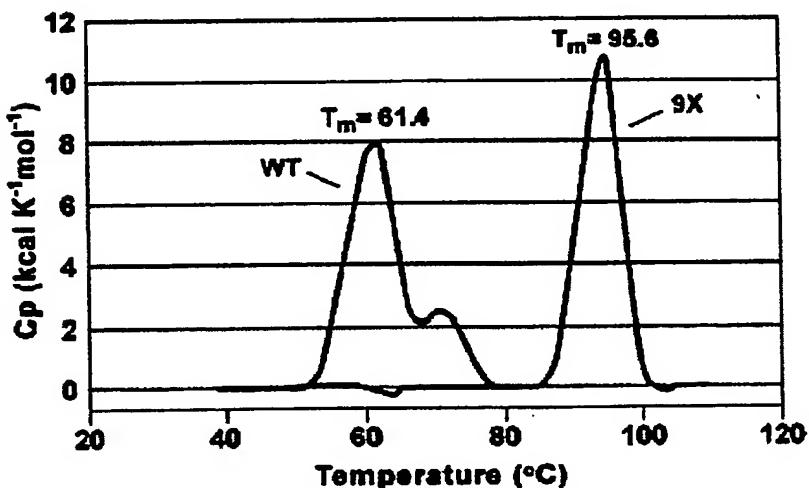


Figure 7

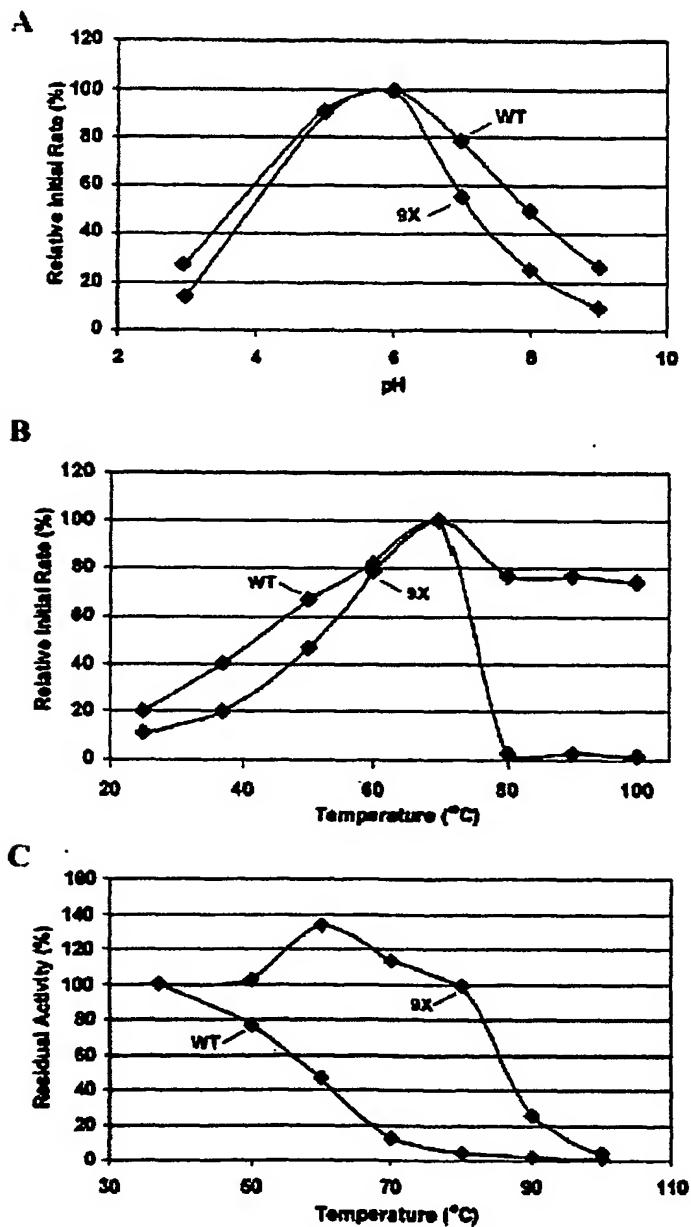


Figure 7

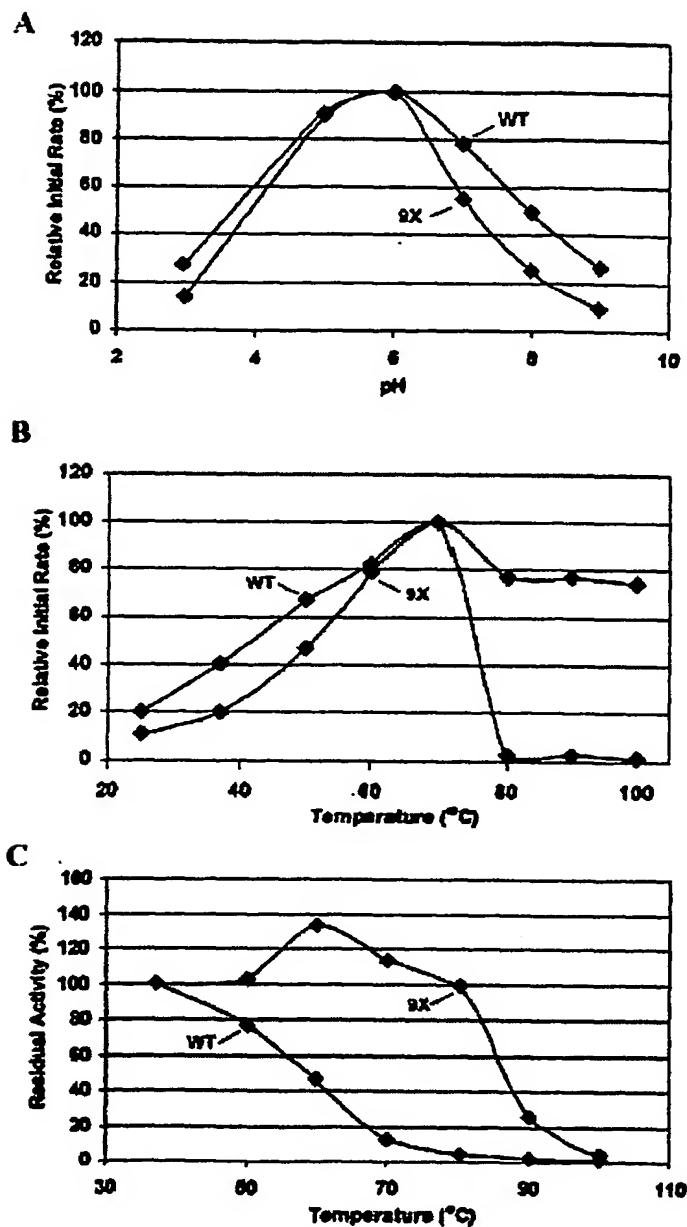


Figure 8

A

Variant	Amino Acid Sequence											T_m (°C)
	1	6	8	11,12	17	30	64,65	68	79	139		
WT	O	...	O	O	O	O	O	O	O	O	O	61
6X-1	O	...	O	O	O	O	O	O	O	O	O	89
6X-2	O	...	O	O	O	O	O	O	O	O	O	90
7X-1	O	...	O	O	O	O	O	O	O	O	O	89
7X-2	O	...	O	O	O	O	O	O	O	O	O	91
7X-3	O	...	O	O	O	O	O	O	O	O	O	88
7X-4	O	...	O	O	O	O	O	O	O	O	O	91
8X-1	O	...	O	O	O	O	O	O	O	O	O	90
8X-2	O	...	O	O	O	O	O	O	O	O	O	90
8X-3	O	...	O	O	O	O	O	O	O	O	O	93
8X-4	O	...	O	O	O	O	O	O	O	O	O	94
9X	O	...	O	O	O	O	O	O	O	O	O	96

D87 G11H G17I G60H P64Y G88A S79P
 N12L S65V

B

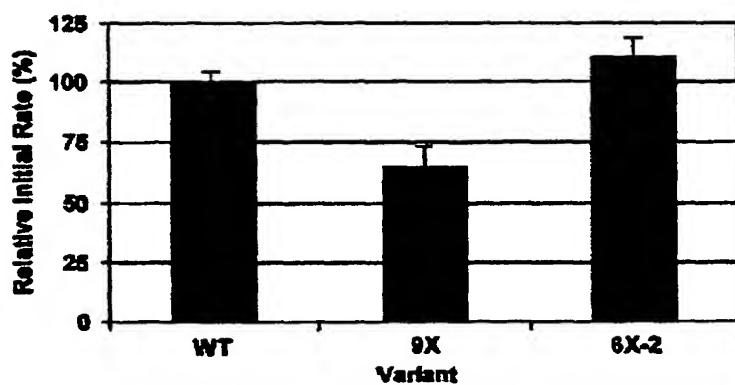


Figure 8

A

Variant	Amino Acid Sequence											T_m (°C)
	1	5	8	11,12	17	60	84,85	68	79	169		
WT	Q	...	C	C	C	C	C	C	C	C	...	61
6X-1	Q	...	C	C	C	C	C	C	C	C	...	89
6X-2	Q	...	C	C	C	C	C	C	C	C	...	90
7X-1	Q	...	C	C	C	C	C	C	C	C	...	89
7X-2	Q	...	C	C	C	C	C	C	C	C	...	91
7X-3	Q	...	C	C	C	C	C	C	C	C	...	89
7X-4	Q	...	C	C	C	C	C	C	C	C	...	91
8X-1	Q	...	C	C	C	C	C	C	C	C	...	90
8X-2	Q	...	C	C	C	C	C	C	C	C	...	90
8X-3	Q	...	C	C	C	C	C	C	C	C	...	93
8X-4	Q	...	C	C	C	C	C	C	C	C	...	94
9X	Q	...	C	C	C	C	C	C	C	C	...	96

Q11H G17I G60H P64Y G88A
 N12L S65V S78P

B

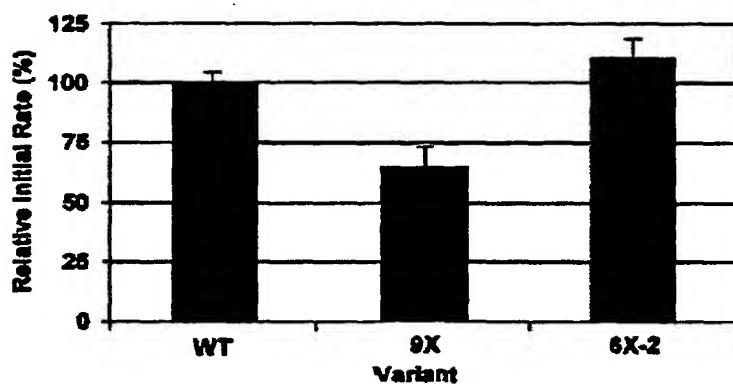


Figure 9

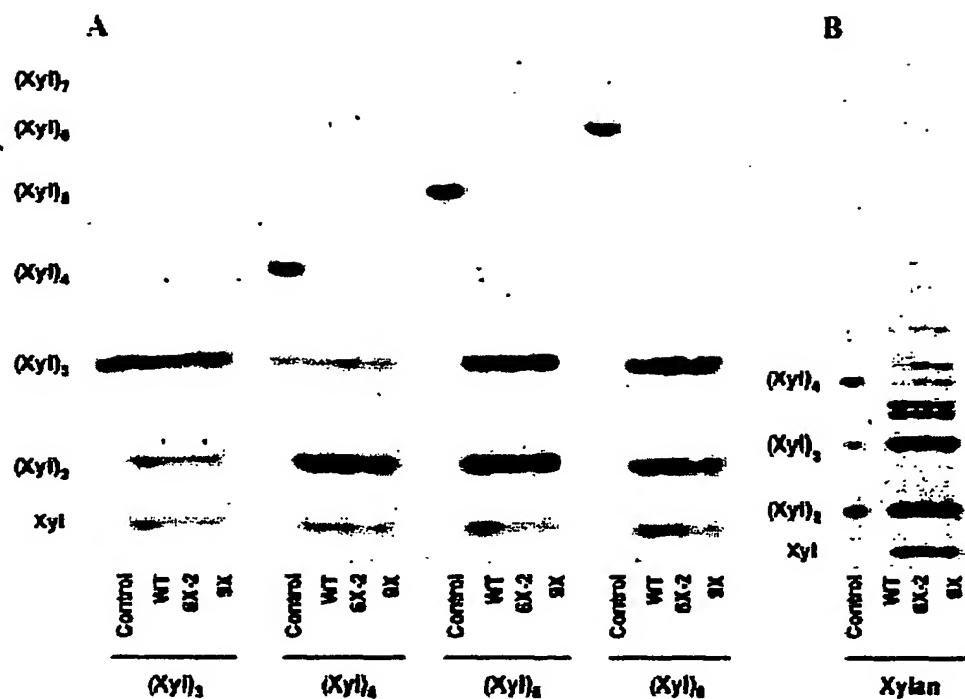


Figure 10

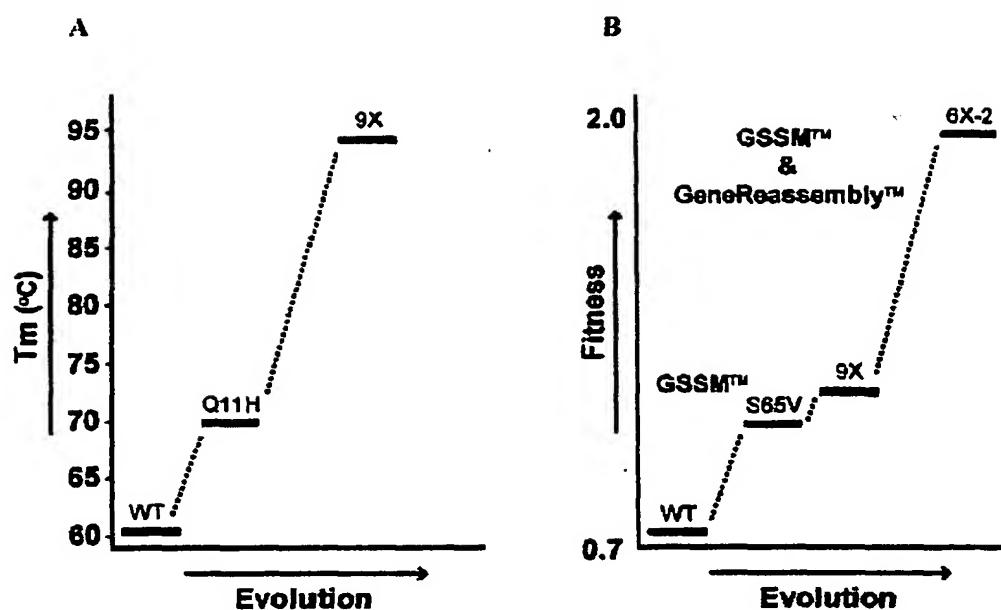


Figure 10

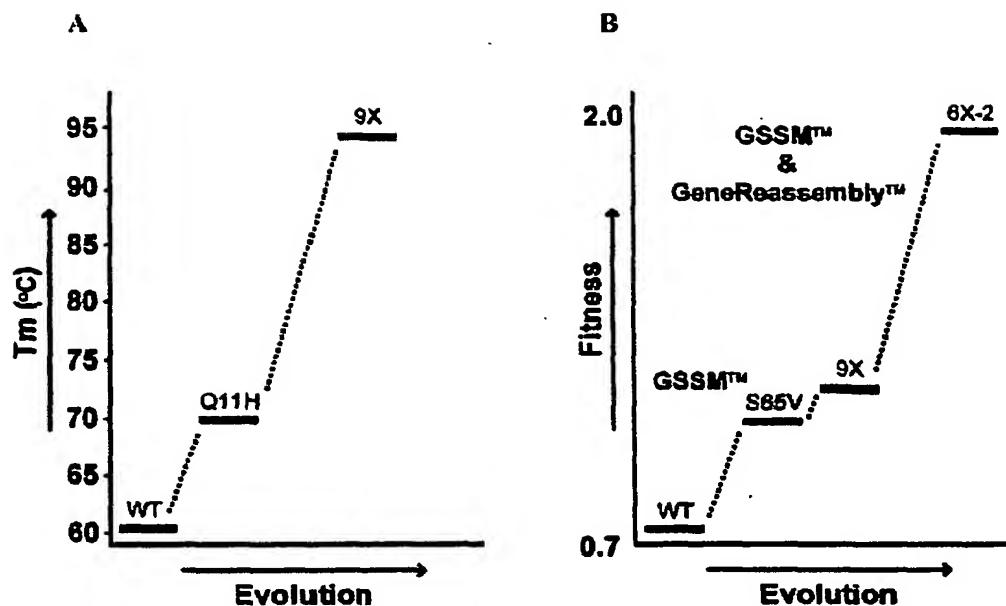
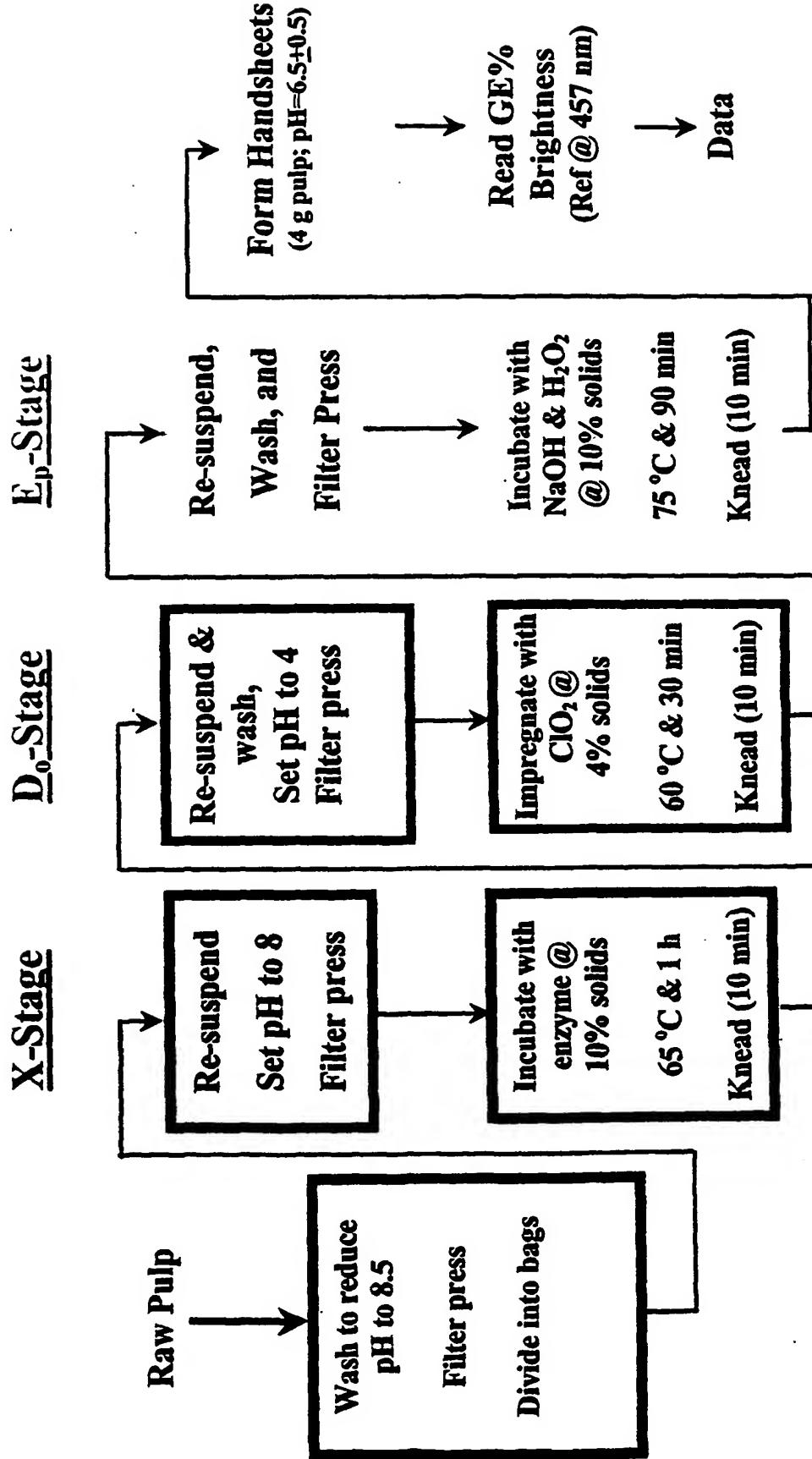


Fig. 11. Diversa Applications Lab Biobleaching Scheme



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